ABSTRACT OF THE DISCLOSURE

A ferritic stainless steel having improved high temperature mechanical properties includes greater than 25 weight percent chromium, 0.75 up to 1.5 weight percent molybdenum, up to 0.05 weight percent carbon, and at least one of niobium, titanium, and tantalum, wherein the sum of the weight percentages of niobium, titanium, and tantalum satisfies the following equation:

$$0.4 \leq (\%Nb + \%Ti + \tfrac{1}{2}(\%Ta)) \leq 1.$$

The coefficient of thermal expansion of the ferritic stainless steel is within 25 percent of the CTE of stabilized zirconia between 20°C (68°F) and 1000°C (1832°F), and the steel exhibits at least one creep property selected from creep rupture strength of at least 1000 psi at 900°C (1652°F), time to 1% creep strain of at least 100 hours at 900°C (1652°F) under load of 1000 psi, and time to 2% creep strain of at least 200 hours at 900°C (1652°F) under load of 1000 psi. The steel is particularly suited for high temperature applications including, but not limited to, current collecting interconnects in solid oxide fuel cells, furnace hardware, equipment for the chemical process, petrochemical, electrical power generation, and pollution control industries, and equipment for handling molten copper and other molten metals.